

REMARKS

Claims 1 and 4-9 are pending in this application. Claims 7 and 8 are withdrawn from consideration. By this Amendment, claim 1 is amended and claim 2 is canceled without prejudice to, or disclaimer of, the subject matter recited therein. Support for the amendment to claim 1 can be found at least at page 10, line 8 and canceled claim 2. No new matter is added. Reconsideration and allowance are respectfully requested.

I. Claim Rejections Under 35 U.S.C. §103

The Office Action rejects claims 1, 2, 6 and 9 under 35 U.S.C. §103(a) over U.S. Patent Application Publication No. 2003/0020157 (Natori) in view of U.S. Patent No. 6,365,236 (Maloney) in view of U.S. Patent No. 6,393,210 (Wu); rejects claim 4 under 35 U.S.C. §103(a) over Natori in view of Maloney in view of Wu in view of U.S. Patent No. 6,225,156 (Cuchiaro); and rejects claim 5 under 35 U.S.C. §103(a) over Natori in view of Maloney in view of Wu in view of U.S. Patent No. 5,846,293 (Rubey). These rejections are respectfully traversed.

The Office Action asserts that the combination of Natori, Maloney and Wu render obvious each and every feature of independent claim 1 and canceled claim 2. Applicants respectfully submit that these references at least fail to teach or render obvious "providing a treatment target in which a raw material body including complex oxide and a metal material including lead or bismuth is applied to a substrate ... crystallizing the raw material body by increasing pressure of the gas in the chamber to a predetermined pressure of two atmospheres or more and heating the treatment target to a second temperature in the chamber by a heat treatment to obtain a ferroelectric ceramic ... wherein the heat treatment is performed by using a rapid thermal annealing method," as recited in independent claim 1.

In general, lead or bismuth (Pb or Bi) contained in the raw material body easily vaporizes at low temperatures due to high vapor pressure and bonds to oxygen at low

temperature during a conventional heating method. Thus, in order to compensate for the shortage of Pb or Bi in a conventional method, Pb or Bi is initially included in the raw material as an excess additive, although such a measure causes the crystal quality to deteriorate.

The presently claimed features prevent Pb or Bi from being vaporized by reducing heating time at low temperatures by (1) the oxidizing gas being heated to a first temperature; (2) increasing pressure of the gas in the chamber; and (3) applying a rapid thermal annealing method. In combination, these features allow use of a raw material having a composition approximately the same as the stoichiometric composition, thus obtaining a ferroelectric that has excellent crystal orientation and hysteresis characteristics.

Furthermore, none of the applied references teach preventing vaporization of Pb or Bi. Additionally, Cuchiaro and Rubey do not cure the deficiencies of Natori, Maloney and Wu.

Claims 4-6 and 9 depend from claim 1. Because the applied references fail to anticipate or render obvious each of the features recited in independent claim 1, dependent claims 4-6 and 9 are patentable for at least the reasons that claim 1 is patentable, as well as for the additional features they recite.

Accordingly, withdrawal of the rejections is respectfully requested.

II. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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